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BUILDING COMMISSIONING

for better public buildings

CASE STUDY

Gallagher School of Business Administration Building

"The re-commissioning project was a cost-effective option to assure proper operation per design criteria affecting energy savings, maintaining comfort and providing guidance to prioritize maintenance schedules in a relatively new building."

- Toby Benson, State Program Coordinator, DEQ

COMMISSIONING QUICK FACTS

Building: Gallagher Business Administration

Location: University of Montana, Missoula, MT

Completion date: Fall, 2002

Scope of project: Re-commissioning

Commissioning cost: $24,380[1]

First-year cost benefit: $10,600[2]

Annual energy savings: $26,300[3]

[1] Commissioning providers fee only.

[2] Cost reduction or avoidance.

[3] Annual energy savings based on cost of electricity of $0.0494/kWh and natural gas of $0.755 /therm.

MEETING TODAY'S NEEDS IN AGING BUILDINGS

After 4½ years of operation, the University of Montana in Missoula, Montana decided to re-commission the 110,380-square-foot Gallagher School of Business Administration Building. The University wanted to determine the value of re-commissioning a relatively new building with complicated HVAC and control systems. The facility was built in 1997 and was originally commissioned late in the process, during initial occupancy, to confirm HVAC systems, equipment, and controls were installed per the contract documents.

The University partnered with the Montana Department of Environmental Quality to initiate a commissioning study to identify the problems and diagnose corrective action. The Montana DEQ, with funding from the Northwest Energy Efficiency Alliance, and support from US DOE's Rebuild America Program, developed a scope of work and contracted with a local commissioning provider.

BUILDING COMMISSIONING

Is a systematic and documented process of ensuring that the owner's operational needs are met, building systems perform efficiently, and building operators are properly trained.

The Gallagher School facility contains classrooms, lecture halls and offices on four levels. The building's complex HVAC system was designed to be a state-of-the-art energy-efficient system.

Operational problems and occupant complaints started to surface after several years of use. The re-commissioning concentrated on the operation and performance of key HVAC systems and controls. The re-commissioning project identified, diagnosed and pro-

over

Gallagher School of Business Administration Building

vided recommended corrective action of 346 problems including damper and linkage binding that prevented full opening and closure, leaky or non-closing valves, plugged filters, and calibration and adjustment of controls connected to equipment.

It is interesting to note that 87% of the potential for energy savings found in the re-commissioning project were attributed to systems that had been manually overridden to "occupied" mode and never returned to the original scheduled settings.

As a result of the re-commissioning and a payback analysis, Montana DEQ recommended that the University have the Gallagher Building re-commissioned on a three to five-year cycle to keep the building performing efficiently.

LESSONS LEARNED

- Even commissioned buildings may need to be revisited over time. Re-commissioning is required for complex HVAC control systems on a periodic basis to help assure the building operates efficiently and meets the building owner needs.
- Re-commissioning may be needed sooner if the original commissioning begins after the design phase.
- Re-commissioning can address many of the reoccurring changes associated with building operation, performance, comfort and use.

COMMISSIONING BENEFITS

- Reduced energy costs (operating costs)
- Increased occupant comfort and indoor air quality
- Reduce operational deficiencies through enhanced maintenance.
- Fewer occupant complaints

"Although many of the design problems were identified during original commissioning, the problems were not adequately addressed and, as a result, those problems became apparent again during the re-commissioning of the building."

- John Phillips, P.E., Facility Improvement Corporation

PROJECT PARTNERS

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Montana Department of Environmental Quality

Rebuild America